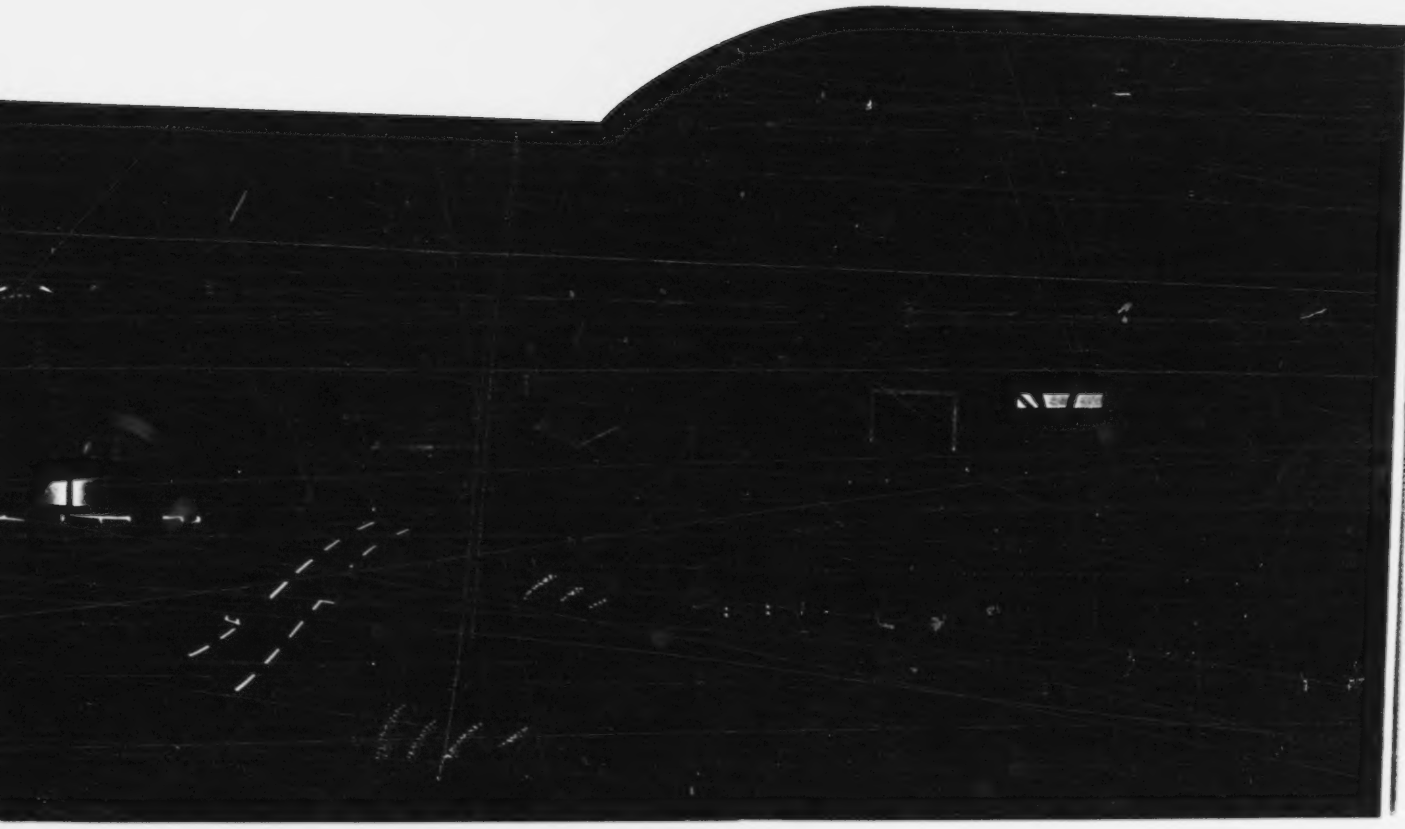
October 2002

# ALBERTANS & CLIMATE CHANGE

## *Taking Action*



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**In May 2002, the Government of Alberta released a draft *Plan for Action* proposing an Alberta approach to address the issue of climate change and reduce greenhouse gas emissions.**

**Following extensive consultations, the finalized Alberta plan - *Albertans & Climate Change: Taking Action* - establishes a framework to reduce greenhouse gas emissions.**

**The plan focuses on improving energy efficiency, enhancing technology to control industrial emissions, seeking out renewable energy sources and better emissions management. Alberta's action plan is another step towards an achievable national climate change strategy.**

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# Alberta's Climate Change Action Plan

## Executive Summary

The Alberta government is committed to taking effective action on climate change. *Albertans & Climate Change: Taking Action* provides a comprehensive framework for an aggressive set of actions that will reduce greenhouse gas emissions and train Alberta's economy to operate in a way that contributes to our environment and our future.

By 2020, Alberta will cut emissions in the province relative to GDP by 50 per cent below 1990 levels. This will be about a 60 million tonne reduction in greenhouse gas emissions below "business as usual" levels. To measure our progress towards this target, Alberta's greenhouse gas emissions will be expected to be 20 million tonnes lower than "business as usual" by 2010.

The following actions will be taken to achieve this target.

### Negotiate agreements with key sectors

The Alberta government will:

- Work with stakeholders through the Clean Air Strategic Alliance on managing air emissions from Alberta's electricity sector.
- Begin negotiations on emissions reductions with the oil and gas sector in November 2002.
- Begin negotiations with nine other sectors by Spring 2003.
- Include regulatory backstops such as standards, inclusion in approvals, and financial consequences for non-participation, in emission reduction targets.
- Define expectations for mandatory industry greenhouse gas reporting.

### Emissions trading

The Alberta government will:

- Develop a definition for eligible greenhouse gas offsets.
- Establish a registry for greenhouse gas offsets.
- Take part in initiatives to buy real emission reductions.

### Put the Alberta government "house" in order

The Alberta government has now cut greenhouse gas emissions from its own operations by more than 20 per cent (compared with 1990 levels). We have won three national awards for these efforts and are committed to reducing our emissions by 26

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percent below 1990 levels by 2005. We will:

- Fund deployment of innovative technologies in government operations.
- Continue to acquire alternative and hybrid vehicles for government use.
- Support energy retrofits for Alberta's schools.
- Roll out a government driver education program that encourages more fuel-efficient driving.
- Insist on "best in class" when leasing vehicles.
- Establish, as part of the Alberta government's own sectoral agreement, a longer-term (post 2005) emission reduction target.

### Help Albertans conserve energy

- Climate Change Central's new *Energy Solutions Alberta* office will provide a one-stop shop for information about energy efficiency and conservation opportunities for homes and small businesses.
- The Alberta government will support Climate Change Central led initiatives including: municipal building and street lighting retrofits, consumer education, energy labeling, vehicle anti-idling, energy-efficient "teletrips", pilot programs for accelerated replacement of household appliances, adoption of new technologies and reducing barriers to low-impact power generation.

### Support technology

- Enhance government support for the Alberta Energy Research Institute and make climate change a key part of its focus.
- Support centres of excellence for clean energy technologies and climate change analysis.

### Carbon management

- Start pilot projects/monitoring programs for using carbon dioxide for enhanced oil recovery. The Alberta government will set a royalty credit for demonstration projects using $CO_2$ for enhanced oil recovery.
- Start a pilot project for $CO_2$ Enhanced Coal Bed Methane recovery.
- Work with other governments to develop protocols for the monitoring of $CO_2$ in stored geologic formations.

### Renewable/alternative energy sources

- The Alberta government will expect average emissions intensity from electricity generation to decrease and will look to Alberta's Clean Air Strategic Alliance for an overall framework under which this will happen. As part of this, the government will expect the renewable and alternative energy portion of the province's total electricity capacity to grow by 3.5 per cent by 2008.
- The Alberta government will expect electricity retailers to disclose the emissions intensity of the electricity they market.

### Biological sinks

- Confirm ownership of the carbon sequestration potential of soil and forests.
- Develop a land use registry to track greenhouse gas emission reductions/removals.
- Participate in and support a Canada-wide university-based research effort to confirm the reliability and estimate the potential for biologic storage of carbon.
- Support Climate Change Central initiatives to develop ways of measuring, monitoring, verifying and trading sink-related greenhouse gas offsets.

### Adapting to climate change

- Work with stakeholders to understand climate change impacts.
- Take part in national and regional research initiatives (Prairie Adaptation Research Collaborative; Water Institute for Semi-Arid Eco-Systems, University of Lethbridge).
- Enhance the Alberta government's adaptation research.

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## Introduction

Alberta is committed to reducing greenhouse gas (GHG) emissions and contributing to an effective approach for responding to the risks of climate change. The Alberta government and many of our partners in industry, academic institutions, municipalities and environmental organizations have been actively involved in the search for an effective climate change response since the issue emerged in the late 1980s and early 1990s. The Alberta government recognizes that global climate change is real and that the current level of scientific agreement on this issue warrants further action. Alberta is prepared to contribute to the global objective of reducing the concentrations of greenhouse gases in the atmosphere through a set of challenging and promising actions.

Over the past decade, Alberta organizations have been recognized as national leaders in taking action to reduce greenhouse gas emissions. Our industries have successfully begun the long-term task of reducing the environmental footprint of the commodities and services they provide to consumers. These organizations have set an example for others to follow on the long road towards a less emissions-intensive economy. Alberta citizens and industries have told us that they are ready for the challenge ahead. They realize the benefits of continuing to search for more efficient ways of producing goods and services and using new technologies that increase competitiveness while reducing waste. The public is increasingly expecting "best in class" environmental performance as well as competitively priced products and services. Alberta organizations are rising to meet this challenge.

Alberta's commitment to sustainable resources and environmental management runs deep and has been well established. Albertans enjoy a high quality of life based on economic, social and environmental factors. Employment opportunities and access to educational, health and social programs flow directly from the strength of our resource-based economy. Alberta's high quality of air and water help ensure the health, well-being and enjoyment of Albertans as they live, work and play in the province. Alberta's dynamic economy and the ability to maintain it in the long term are the direct result of the sustainable management of our natural resources.

In February 2002, the Alberta government released *Albertans & Climate Change: A Strategy For Managing Environmental and Economic Risks*. This strategy outlined the government's climate change approach of influencing the development of an effective national climate change response, while at the same time, taking action within the province to reduce greenhouse gas emissions.

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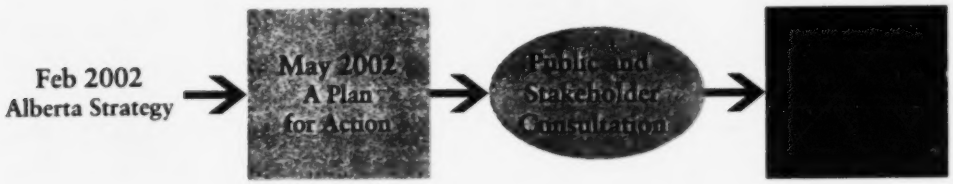
To provide further detail, in May 2002 the province released *Albertans & Climate Change: A Plan for Action.* This draft for discussion outlined how the Alberta government proposed to make an effective contribution to global greenhouse gas emissions reductions.




The draft *Plan for Action* detailed a number of actions for pursuing sustainable greenhouse gas emission reductions within the province. The draft was tested through an extensive set of stakeholder consultations with a range of sectors. Albertans also provided their input. Elements of Alberta's draft plan received strong support. In some areas, stakeholders and the public asked for further detail.

After integrating input from stakeholders and the public, *Albertans & Climate Change: Taking Action* provides the guideposts and signals that define how Alberta will tackle the climate change challenge. This finalized plan establishes the framework and the specific actions the province will take on its long-term journey towards reduced greenhouse gas emissions.

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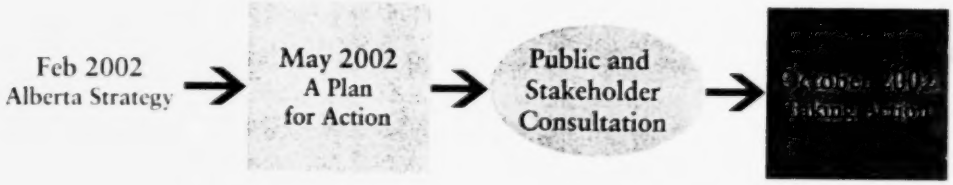


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Albertans & Climate Change

# Background

In May 2002, the Government of Alberta released *Albertans & Climate Change: A Plan for Action*. This draft plan outlined Alberta's position on taking action on climate change and proposed goals, timelines and actions that Albertans could take to address the possible effects of climate change. The *Plan for Action* also represented an approach to reducing greenhouse gas emissions that could be considered by other governments in Canada.

Alberta's *Plan for Action* heavily emphasized the following features:

- Outlining a technologically driven approach, rather than a politically driven one.
- Allowing for immediate action on climate change.
- Setting a realistic timeframe to reflect technology lead times and expected time to replace capital stock.
- Allowing the province to keep capital in Alberta and Canada, facilitating further investment in technology, research and development, rather than spending it primarily on international emission permits.
- Allowing Alberta to exercise its responsibility to address climate change as an environmental and natural resource related issue.
- Working collaboratively - in strategic partnerships with other governments and stakeholders.

Over the summer and fall of 2002, the Alberta government sought the input of Albertans and a wide range of stakeholder groups on the *Plan for Action*. A number of common themes emerged from these consultations, including:

- Albertans recognize the need to take action on climate change. The risks are real and action needs to begin now.
- Environmental progress cannot be achieved in isolation of other policy objectives, including the need to maintain economic prosperity.
- All sectors of the economy must play a role in reducing greenhouse gas emissions.
- Primary emphasis should be placed on achieving emission reductions within the province, positioning Albertans to contribute to lasting emission reductions.
- Our progress in reducing greenhouse gas emissions must be measured and managed in a timely and effective manner. A variety of tools should be used in measuring our progress.

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- There is a need for a cooperative national approach. Stakeholders, particularly industry, require certainty. Duplicate and inconsistent provincial and national approaches are not desired.

*Albertans & Climate Change: Taking Action* is a plan that builds on our dialogue with Albertans and reflects key public and stakeholder priorities, emphasizing climate change actions that have received widespread support. Reflecting the desire of the public and stakeholders for an effective national approach to climate change, this plan is presented as a workable approach that fits Alberta's circumstances and allows Alberta to do its fair share in dealing with an international problem. This plan reflects:

- **A collaborative approach,** through which the Alberta government will work with stakeholders and other governments in a collaborative manner.
- **Our fair share** - which is based on the pursuit of environmentally effective innovative actions that allow for truly "win-win" results.
- **Immediate action** - building on the leadership the province has already shown in reducing greenhouse gas emissions within the province.
- **An appropriate timeframe** - that is consistent with the lead-time necessary for technological innovation and behavioral change.
- **An emphasis on consumers** - as real, long-term greenhouse gas reductions require action and behavioral change by all consumers.
- **A workable and positive national approach** that allows all governments and sectors to contribute to sustainable development.

**This plan was built on the following Core Principles:**

- Informed consultation with key stakeholders and the public in developing and implementing a climate change action plan is vital if we are going to make a meaningful and real difference.
- Any actions we develop must be compatible with our largest trading partner - the United States - to ensure we maintain a competitive economic advantage.
- Immediate investment in emissions control technology is the key to environmental improvements that will also reap economic benefits.
- Ongoing investment in technology and energy research is the key to breaking the link between increasing emissions and economic development.
- As energy consumption drives emissions, energy conservation and efficiency must be a core part of our climate change response.
- Alberta will continue to work with other provinces and territories to develop a national plan that is in Canada's best environmental and economic interests.
- All Albertans must be part of the provincial climate change solution.

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# Taking Action

Alberta's Climate Change Strategy, released in February 2002, emphasized the importance of taking action to reduce greenhouse gas emissions. *Albertans & Climate Change: Taking Action* provides the framework - targets, goals and milestones - that will ensure challenging and effective actions are taken to reduce greenhouse gas emissions. This plan will position the province's citizens and businesses to compete and prosper in a carbon emissions-constrained future and will help the world meet its energy requirements with sharply reduced emissions over the longer term.

*Albertans & Climate Change: Taking Action* sets a province-wide emission reduction target. Alberta's target balances emission reductions and economic performance. It also signals that absolute net reductions in greenhouse gas emissions will be expected. While our target is long-term, actions to reduce greenhouse gas emission reductions will begin immediately. Alberta is prepared to do its part to reduce global greenhouse gas emissions. This plan includes actions in the following areas:

- Government Leadership
- Energy Conservation
- Carbon Management
- Technology and Innovation
- Renewable and Alternative Energy
- Enhancing Carbon Sinks
- Adaptation

The goals, targets and milestones contained in this plan will lead to emissions reductions and the long-term objective of reduced concentrations of greenhouse gas emissions in the atmosphere. Focusing on arbitrary, internationally imposed, short-term targets that are unrealistic and costly for Canada risks a large diversion of investment capital out of Canada. That investment capital is required for developing and implementing technologies and practices within Canada to cost-effectively address our own climate change contributions (i.e., supporting new energy production technologies, developing methods of capturing and storing carbon dioxide, and reducing costs associated with renewable energy).

*Albertans & Climate Change: Taking Action* addresses Alberta's long-term technological opportunities and the role of all energy consumers in reducing greenhouse gas emissions.

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Alberta will contribute to reducing emissions through our expertise in developing and demonstrating leading-edge technologies and innovative practices for producing and delivering low-emissions energy. Our approach will be based on partnering with industry, other organizations and the federal government to pursue shared objectives. This plan will provide a basis from which these organizations can work collaboratively to address climate change.

*What We Heard:*

**Alberta's plan provides a balanced approach to responding to the climate change issue. The province has provided an effective framework under which action can be taken but renewable energy should have a higher profile.**

*Our Response:*

***Albertans & Climate Change: Taking Action* continues to frame action under the same broad focus areas while adding a seventh focus area - Renewable and Alternative Energy.**

## *Emissions Reductions*

### Overall Objective

*By the year 2020, the province will reduce greenhouse gas relative to Gross Domestic Product (GDP) by 50 per cent below 1990 levels. This is a reduction of about 60 million tonnes of carbon dioxide equivalent gases below expected levels. By 2010, Alberta expects to have achieved an emissions intensity improvement of more than 20 per cent and will have reduced emissions by the carbon dioxide equivalent of about 20 million tonnes below expected levels.*

### Alberta's Emissions Reduction Target

Albertans recognize that our climate change response must include both environmental and economic objectives. A provincial greenhouse gas reduction target based on emissions intensity allows us to measure both environmental and economic progress. This approach recognizes the reality of multiple policy objectives and sets a course for a win-win solution. The Alberta government will reduce the greenhouse gas emissions intensity of its economy (emissions relative to GDP) by 50 per cent below 1990 levels by the year 2020. "60 million tonnes by 2020" is a translation of what that level of intensity improvement would mean in tonnes of carbon dioxide equivalent. "20 million tonnes by 2010" is a milestone on the path to 2020.

An emissions intensity objective represents a new way of thinking about our overall objectives. Such targets challenge us to think about what progress will look like at the end of the day. Some stakeholders have equated a 50 per cent reduction in carbon intensity to a doubling of our existing energy efficiency. Other stakeholders still want to see how this target translates into an absolute emission reduction in order to compare Alberta's plan to alternative approaches.

The following table outlines Alberta's emission intensity target and how it translates into projected emission reductions below forecasted levels. While this table also

identifies an interim milestone that may be helpful in measuring our progress towards the 2020 target, other interim milestones will be developed in conjunction with agreements developed between the Alberta government and key sectors (see Government Leadership: Sectoral Agreements).

Alberta's Target: Key Milestones

| Year | 1990 | 2000 | 2010 | 2020 |
|---|---|---|---|---|
| Actual/ "Business as Usual" Emissions Intensity Improvement (below 1990 level) without this plan | | 13% | 16% | 28% |
| Alberta Action Plan Emissions Intensity Target | | | 22% | 50% |
| Actual/ "Business as Usual" Greenhouse Gas Emissions (Million tonnes of $CO_2$ equivalent) without this plan | 171 | 223 | 258 | 278 |
| Milestone Emission Reductions (Million tonnes of $CO_2$ equivalent) Expected from Action Plan | | | 20 | 60 |

This framework for pursuing our target provides a meaningful approach for managing our progress in reducing greenhouse gas emissions. It avoids "solutions" that simply transfer revenue to other parts of the world through permit purchases, leaving less investment capital here to further improve our reduction efforts.

*What We Heard*

**Provincial stakeholders expressed support for an emission intensity targets as a useful way of pursuing greenhouse gas emission reductions without jeopardizing economic growth. Some stakeholders suggested that to make these targets more relevant to Albertans and to key sectors, shorter-term milestones are also required. Others suggested more strongly linking progress towards our carbon intensity targets with reductions in absolute greenhouse gas emissions. They saw merit in having performance measures that relate to intensity improvements as well as absolute reductions in greenhouse gases.**

*Our Response*

***Albertans & Climate Change: Taking Action*** **further elaborates on our 2020 emissions intensity target by outlining mid-term (e.g. 2010) milestones. This plan also translates our emissions intensity improvements to actual greenhouse gas emission reductions below forecast levels.**

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### Relationship to our long-term goal

The Alberta government is committed to a long-term goal of preventing atmospheric concentrations of greenhouse gases from reaching levels that have negative impacts on people and ecosystems. In pursuit of that goal, Alberta recognizes that more significant emissions reductions will be required over the longer term (2050). This action plan is therefore only the beginning of a 50-year initiative to dramatically reduce the carbon intensity of the province's economy. The approach outlined in this plan will ensure Alberta organizations are prepared for this long-term challenge. The plan allows the province to focus its efforts on changes and investments that lead to lasting reductions in greenhouse gas emissions.

### Why an intensity target makes sense

Responding to climate change requires substantive long-term improvements in efficiency and reductions in emissions. Absolute emission reduction targets simply force a jurisdiction to bear the costs of emission reductions while displacing investment, jobs and emissions to nations without greenhouse gas emission reduction targets. Alberta cannot control the global demand for goods and services (especially fossil fuel) but through emissions intensity improvements, we can ensure that our commodities and services reflect best-in-class performance and result in fewer emissions than similar commodities and services produced elsewhere.

Intensity based targets allow organizations, firms, industries and nations to improve their efficiency, reduce waste and ultimately increase their competitiveness. The end result is an effective integration of social, economic and environmental priorities - i.e., People, Prosperity and Preservation.

For Alberta, an emission intensity target makes sense because Canada's major trading partner, the United States, has not adopted an absolute emission reduction target but is instead focusing on improvements in emissions intensity. Canada's approach must reflect the trading relationship we have with the United States. With our economies so closely interrelated, substantive increases in production costs in Canada will simply erode our ability to compete in the international marketplace and attract investment. Alberta needs an approach that will allow our economy to continue to flourish within the North American context while at the same time positioning the province for long-term contributions towards effective emission reductions.

Some stakeholders have questioned what a 50 per cent reduction in carbon intensity means. A wide range of perspectives has been put forward. Some feel it reflects little more than "business as usual" improvements, while others equate this target with a "wartime" effort. The Alberta government believes that a 50 per cent reduction in emissions intensity is a realistic yet challenging target. Based on emissions data from Environment Canada and economic data from Alberta Finance, Alberta has already reduced its intensity by about 13 per cent between 1990 and 2000 (a period of significant economic growth within the province). Current national economic projections suggest that without additional action, emissions intensity would be about 28 per cent below 1990 levels by 2020. The 50 per cent target is almost a doubling of

our efforts to improve efficiency and reduce emissions. This level of reduction will be challenging. Some stakeholders have equated this effort to the level of efficiency gains the economy experienced in the late 1970s and early 1980s - a period of rapidly rising energy costs.

A 50 per cent reduction in greenhouse gas emissions intensity is a goal that will require investment to develop new technologies and innovations, and put new technologies and practices into operation. It is a tough but realistic level of emission reductions. Achieving these reductions will require action across the Alberta economy - in all areas that consume energy - and in areas that can potentially sequester or capture and store carbon dioxide emissions.

### Achieving our Target

*Albertans & Climate Change: Taking Action* outlines the approach Alberta will use to get to our target. The plan outlines a framework for the Alberta government to work with our partners to set greenhouse gas reduction expectations. This framework provides organizations (including energy producers and energy consumers) with certainty as to what government expects of them - while at the same time providing them with flexibility and innovation in pursuing these reductions.

This plan also outlines how the government will facilitate investment in technologies related to conserving energy, lowering the emissions intensity of fossil fuel production and consumption, and non-fossil fuel based technologies. The Alberta government expects that all sectors, energy consumers and other governments will play a meaningful role. Responding to climate change requires a fundamental shift in our energy consumption patterns. The Alberta government, through our partnerships in groups like Climate Change Central, will provide consumers with the information and tools they need to contribute to climate change efforts.

The Alberta government will ensure that actions to achieve the emissions intensity objective contained in this plan - as well as other key elements of the plan - are given a high level of priority and importance.

- Alberta will back up its targets with the necessary legislative, regulatory and financial provisions to provide all organizations with certainty about the province's expectations for carbon intensity improvements and the steps being planned to achieve this target.

### Best-in-Class Performance

Many Alberta organizations have told us that they strive to use best practices in their production of goods and services. They realize that increasing their energy efficiency and reducing their waste are practical actions that enhance competitiveness. *Albertans & Climate Change: Taking Action* is based on the principle that all Alberta organizations should demonstrate best-in-class performance - using the best technologies and practices that are commercially feasible. Alberta will ensure that its energy services are as clean or cleaner than their international competition.

Global competitors of Alberta organizations will continue to increase their energy efficiency and improve their emissions intensity performance, so it is vital to the

ongoing competitiveness of Alberta organizations that they innovate and pursue leading-edge, best-in-class production practices. The Alberta government will work with industry and business to accelerate their adoption of best practices and deployment of best-in-class technologies. Through negotiated agreements with key sectors, the Alberta government will establish a framework under which best-in-class performance can be achieved. Many Alberta organizations have told us they are ready and willing to take up this challenge.

*What We Heard:*

**Some stakeholders found it confusing to differentiate between Alberta's emissions related to domestic consumption and emissions related to the goods we produce for export out of the province.**

*Our Response:*

***Albertans & Climate Change: Taking Action* is based on the principle that our target relates to all provincial greenhouse gas emissions regardless of the destination of Alberta's commodities. This plan does not differentiate between emissions produced by goods produced for consumption within or outside Alberta.**

## Government Leadership

Vision

*Alberta organizations and the public will have a clear understanding of the role they can play and the tools they can use to reduce the carbon intensity of their activities. In leading the way, the Alberta government will adopt leading-edge energy efficient practices and technologies that significantly reduce the environmental footprint of government operations.*

The government's overall role in addressing climate change is to be a leader, a partner, a facilitator and an innovator. It is government's role to educate, motivate, inspire, celebrate and ensure action is being taken.

The Government of Alberta has been addressing climate change since 1990 by seeking to influence national policy and by taking action to encourage the reduction of greenhouse gas emissions in Alberta. We are acknowledged as a national leader in this area both through our early actions to date, and by the fact that the Alberta government is the only government in Canada to win a national leadership award — three times to date — for voluntarily reducing greenhouse gas emissions.

In 1995, the government made a written public commitment to reduce overall greenhouse gas emissions from its operations by 14.1 per cent below 1990 emission levels by 2000. By the end of 2000, the government had exceeded this target, reducing emissions by 22 per cent below 1990 levels.

As well, in 1999 the Government of Alberta formally established Climate Change Central, a unique private-public partnership non-profit organization, to follow up and implement key directions and recommendations for addressing climate change.

The Government of Alberta is committed to leading action on climate change on key province-wide actions and initiatives, and to taking action immediately and, where possible, within government itself.

Climate change is not just a government issue. It is not just an industry issue. Consumption is the key driver behind emissions - so it is an issue for everyone. As a result, all Albertans must work together to make a difference. The government will work directly, as well as through Climate Change Central and other established, complementary organizations, to engage all Albertans in reducing emissions.

### Sectoral Agreements

Alberta organizations - industry, municipalities, consumer organizations - are looking for an overall framework under which they can take best-in-class actions to reduce greenhouse gas emissions and reduce economic and environmental risks. The Alberta government is committed to providing leadership and increased certainty to these organizations and clearly outlining how it will work in partnership to achieve these reductions.

In May 2002, the Alberta government proposed to negotiate agreements with specific economic sectors, including electricity, petroleum, transportation, forestry, municipalities and other industries to gain commitment for action to reduce greenhouse gas emissions. The province will also commit to reducing emissions from its own operations — in effect a sectoral agreement with Albertans – setting an example for others by demonstrating a range of cost-effective actions.

These agreements will be based on realistic emission reductions expectations. Industry will be asked to reduce emissions to levels that are consistent with the adoption of best practices. The opportunity for further reductions will be provided through emissions trading mechanisms, allowing for least-cost emission reductions.

*What We Heard*

**During our consultations, Alberta stakeholders expressed strong support for using sectoral agreements as the key policy mechanism for pursuing emission reductions. Stakeholders believed that this mechanism could ensure emission reductions targets were firm and well understood while providing key sectors with flexibility in how they achieved the reductions. Some stakeholders identified the importance of having a strong framework that ensures a "level playing field" among different organizations within a sector. They supported the idea of a regulatory "backstop" to ensure fairness and that the desired results are achieved.**

*Our Response*

**Sectoral agreements are a key element of *Albertans & Climate Change: Taking Action*. To ensure fairness, equity and certainty, the province will establish regulatory "backstops." Alberta will ensure that the necessary legislative, regulatory and financial provisions are developed to provide these "backstops."**

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ACTION:

**Over the next two years, the Alberta government will negotiate binding agreements with specific sectors, including electricity, petroleum, transportation, forestry, municipalities, mining, manufacturing, commercial and agriculture to set measurable goals for reducing greenhouse gas emissions.**

These agreements will be negotiated between the Alberta government and various sectors of the economy using sector associations to bring companies to the table. Government will define the sectors and the agreements will focus on covering all the firms and emissions in a sector. The specific approach to negotiating agreements will be tailored to the circumstances of each sector.

The Alberta government will seek to work with other provincial and territorial governments and the federal government to ensure the consistency, compatibility and harmonization of these agreements across the country. Where appropriate, other provinces or territories may spearhead specific sectoral negotiations with the expectation that agreements consistent with Alberta's plan would be applied and accepted in Alberta.

Each agreement will establish a measurable goal based on emissions per unit of production. The objective of each agreement is to establish a reduction target that reflects reasonable costs, takes into account expected technological or other opportunities, and encourages investments that enhance competitiveness. The negotiated agreements will establish greenhouse gas emission reduction targets that are linked to the overall Alberta target. Specific objectives related to the sector as a whole, such as support for research and technology development or infrastructure improvements, could form part of the agreements.

Regulations will ensure that organizations who choose not to sign on to a sector agreement will be required to meet at least the same reduction requirements.

The agreements will:

- Be developed in an open and transparent manner.
- Cover most of the greenhouse gas emissions and all but the smallest companies within each sector.
- Allow for sector-wide initiatives to be pursued.
- Allow flexibility in how the target is achieved (not prescriptive).
- Establish a baseline from which performance is compared.
- Cover the period to 2020 with periodic reviews to assess performance and relevance.
- Include specific goals and interim benchmark/targets to encourage continuous improvement.

- Include ongoing monitoring, verification and reporting.
- Include commitments by both government and the sector.
- Include a regulatory backstop to ensure a level playing field within each sector.
- Allow for innovative mechanisms (e.g. the option for participants to contribute to an Alberta Climate Change and Emissions Management Fund that would be used to support further technology deployment and development and energy efficiency and conservation initiatives) if sectoral greenhouse gas objectives are not met.
- Strive for consistency and fairness across sectors.
- Be signed at an executive level.

The Alberta government is already pursuing this approach for Alberta's electricity sector through a collaborative process run by Alberta's Clean Air Strategic Alliance (CASA). In June 2003, the Alberta government will receive CASA's recommendations for a new air emissions management framework for Alberta's electricity sector. The government expects that those recommendations will provide the basis for an agreement for the electricity sector.

Sectoral agreements will build on existing initiatives - the work of CASA in developing a framework for reducing flaring within the petroleum sector provides an excellent example. Under this approach, the government made a clear policy statement that flaring had to be reduced. A workable framework for reducing and managing flaring was developed, including performance standards that could be met through voluntary actions but were "backstopped" by clear government statements regarding the regulatory consequences of not achieving the sector-wide objectives. Through this broad sectoral approach, this sector has been able to reduce flaring of oilfield gases by 50 per cent in the past year - well ahead of projected targets.

- In November 2002, the Alberta government will begin discussions with the petroleum sector to develop a sectoral agreement for reductions in emissions intensity. It is expected these negotiations will be completed within one year.

In addition to the Alberta electricity and petroleum sectors, partnership agreements will be sought with a broader range of sectors that will include: agriculture, transportation, mining, manufacturing (chemical, pulp and paper, etc.), commercial, municipalities, and forestry.

- In Spring 2003, negotiations will commence with these other key sectors.

*ACTION:*

**Implement mandatory greenhouse gas emissions reporting for large emission sources.**

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The Alberta government will require large emitting sources (facilities with annual carbon dioxide equivalent emissions higher than 100-150 kilotonnes) to report their greenhouse gas emissions, allowing the province to develop a better understanding of the nature of its greenhouse gas emissions sources. Greenhouse gas reporting will also help industry better manage its own emissions - allowing them to track progress and understand opportunities for emission reductions.

- Alberta Environment, working with industry, has begun to develop a system through which large greenhouse gas emitting facilities will report on their annual greenhouse gas emissions - with the first annual reports filed in the beginning of 2004 for emissions in 2003.

Efforts will be made to avoid duplication (e.g. provincial and federal reporting requirements). Alberta's approach will allow for the development of an effective national system of greenhouse gas reporting that can be adopted by other governments.

*ACTION:*

**Lead the development of an emission offset trading system. This system will reflect Alberta's unique needs and circumstances, complement the negotiated sectoral agreements, and work with national, continental and international systems.**

In addressing climate change, an emission reduction in southern Alberta has the same environmental benefit as an emission reduction in northern Alberta. Emission offset trading is a mechanism by which an organization could purchase emission reductions from another organization that had exceeded its emission targets. The purchasing organization would then apply this offset to its own emission reduction objectives. Rules would ensure that such emission reductions were real and verifiable, and properly tracked to ensure that a particular offset is used by a single organization.

Emission offset trading systems, if properly designed, can provide an effective tool through which organizations can understand emission reduction costs and opportunities and ensure least-cost emission reductions are being achieved. They also allow organizations to pursue emission reduction opportunities that are outside of their operations. The Alberta government recognizes the merits of emission trading systems.

In *Albertans & Climate Change: A Strategy for Managing Environmental and Economic Risks*, the Government of Alberta outlined its commitment to a domestic emissions trading system that allows the province to retain the ability to set overall greenhouse gas emission reduction objectives and participate in national, continental and international trading systems that may allow for larger emission reduction opportunities to be pursued.

The Alberta government has already begun to establish a foundation for an emission offset trading system. Alberta has provided the stimulus for emissions offset trading by requiring that all new approved thermal (coal-fired) generation facilities offset their greenhouse gas emissions down to the level of a combined cycle natural gas turbine. This represents a 53 to 63 per cent reduction in net greenhouse gas emissions from these facilities. In developing rules around the creation and use of offsets, the Alberta government will build on experience gained through provincial, regional and national emission offset trading initiatives (e.g. Greenhouse Gas Emission Reduction Trading (GERT) Pilot).

Building on this initial direction, Alberta is well positioned to move forward as a leader in establishing the mechanisms for emission offset trading. Alberta can build on its experience in developing energy markets and defining commodities that can be traded on the open market.

Alberta will determine the reduction commitments of Alberta sectors through negotiated sectoral agreements. These negotiations will determine the scope through which sectors will be able to pursue emission reductions through emissions trading systems. In advance of sectoral consultations, the Alberta government is taking action to facilitate participation in emissions trading systems. For example:

- Alberta will work with Climate Change Central and the Voluntary Challenge and Registry (VCR Inc.) to develop an effective Emission Reduction Registry. Existing registries (such as VCR Inc.) will be considered for this role, with the goal of ensuring registered emission reductions have clear and unique title and can form the basis for transparent verification protocols.
- Alberta will build on its current work within the electricity sector to further expand on rules for creating and using emission offsets. As part of this work, the Alberta government is consulting with stakeholders on:
  - The range of activities and initiatives within the province that would be eligible for credit creation (e.g. role of telecommuting initiatives).
  - Linking our approach to emerging continental trading systems (possibly linked to NAFTA) that allows for U.S.-based credits.
  - The viability of developing a joint industry/government Climate Change and Emissions Management Fund to support provincial investments in real emission reductions that also advance Alberta economic and technology transfer opportunities.
- The Alberta government is supporting efforts by Climate Change Central to develop standard mechanisms for trading the emission reductions associated with agriculture and forestry sinks.
- Alberta has launched a major feasibility study on the potential design of an emission trading system. This study will examine the potential for emission trading for greenhouse gases as well as for air contaminants, such as sulphur dioxide and nitrogen oxides. The results of this major study will inform our negotiations on sectoral agreements.
- The Alberta government will participate in a national program involving the review, selection and purchase of emission reductions by governments across Canada. Participation in this initiative, called the Pilot Emission Removals, Reductions and Learnings (PERRL) program, will provide valuable information for the Alberta government around emission reduction opportunities in Alberta and the process and procedures for determining real and verifiable emission reductions. The Alberta government will work on this initiative with Climate Change Central, who will serve as Alberta's PERRL Program Authority.

*What We Heard*

**Stakeholders generally supported the Alberta government's emphasis on sectoral agreements. They concurred that such agreements could challenge sectors to achieve meaningful yet realistic emission reductions. These agreements could help ensure that financial resources are focused on greenhouse gas activities within the province rather than on the purchase of international emission permits. While emission offset trading could play an important role, care needs to be taken to ensure that provincial offset trading systems are consistent with emerging continental and international approaches.**

*Our Response*

**The Alberta government will use sectoral agreements as the primary approach to establishing meaningful emission intensity targets. By using the "bottom up" approach - focusing on realistic targets that can be achieved by actions in Alberta - this plan limits the need for purchasing international emission permits and trading. However, emission offset trading which is compatible with continental and international systems will be established to provide sectors with flexibility.**

The Alberta government seeks to ensure the broadest possible framework for emissions trading, thereby ensuring a robust and effective market that lowers the cost of achieving any specific reduction. Through mechanisms such as an Alberta Climate Change and Emissions Management Fund, the province will effectively limit the costs to industry of having to purchase greenhouse gas emission reductions and, instead, allow for the private sector to invest in provincial research and development and energy efficiency and conservation initiatives, keeping investment and capital in Alberta.

The Alberta government will continue to work with other governments in Canada to ensure there is a consistent commodity that can be traded across Canada, and possibly within North America and internationally.

*ACTION:*

**Lead by example through action within the Government of Alberta.**

The Alberta government has led by example and reduced emissions from its own operations. Cost effective actions taken in government buildings and fleets since 1995 have resulted in a 22 per cent reduction in greenhouse gases below 1990 levels. This achievement exceeded the government's target (established in 1995) of a 14.1 per cent reduction in greenhouse gas emissions below 1990 levels by the year 2000.

A new target of a 26 per cent reduction below 1990 levels by 2005 has been established. Longer-term targets will also be established as part of the Alberta government's own sectoral agreement with Albertans.

In its efforts to continue to highlight the range of opportunities available to others, the Alberta government will take actions that include the following:

- Reduce emissions related to government activities and facilities by 26 per cent below 1990 levels by 2005 as set out in the Alberta government's Voluntary Challenge and Registry (VCR) Action Plan and take action to encourage boards and authorities to reduce emissions in government funded facilities (i.e. schools and hospitals).
- Complete energy retrofit programs in 190 government facilities, comprising 60 per cent of the area managed by government.
- Install cogeneration (combined power and heating from natural gas) units at government-funded research facilities.
- Consider recommendations of the Minister's Symposium on Schools to support the development of durable, multi-functional, flexible "Green" schools. This will include implementing a sustainable building rating system.
- Ensure new government buildings and government-funded buildings are built to energy efficiency standards that exceed those of the Model National Energy Code for Buildings.
- Register the Alberta Government VCR Action Plan under the VCR Inc. Champions in Action initiative - ensuring the province's plan receives a rigorous peer review and receives the highest level of national recognition.
- Establish, as part of the Alberta government's own sectoral agreement, a long-term (post 2005) emission reduction target.
- Establish a Sustainable Infrastructure Fund for reducing emissions within government through the deployment of innovative low-emission technologies.
- Install solar panels to generate electricity for the Alberta Legislature.
- Purchase or lease 100 new alternative fuel or hybrid vehicles for the government fleet over the next three years, building on Alberta Environment's purchase of hybrid vehicles.
- Commit to purchasing green power (beginning in 2004) for at least 10 per cent of electricity consumed at government facilities and immediately begin securing a diverse portfolio of green power providers.
- Roll out a Driver Education Program to government fleet drivers.
- Implement a government vehicle leasing process that accounts for "best in class" fuel efficiency ratings.

*What We Heard:*

**Some stakeholders thought that Alberta government success stories needed to be more broadly communicated to encourage action in institutional and commercial sectors.**

*Our Response:*

**The Alberta government will remain committed to the national Voluntary Challenge and Registry (VCR Inc.) as a means of taking action within its own operations. Over the coming year, the Alberta government will register its Action Plan with the VCR Inc. Champions in Action initiative. The Alberta government will also apply its knowledge to key institutional sectors such as schools and hospitals.**

## *Technology and Innovation*

Vision

*Alberta is recognized around the globe for leading-edge innovation in environmentally sustainable technologies that maximize the value of Alberta's energy and other resources and the prosperity of its citizens.*

The Government of Alberta is supporting strategic research into reducing the costs and environmental footprint associated with energy production, distribution and use in Alberta. The intent is to break the link between hydrocarbon energy development and greenhouse gas emissions, thereby sustaining Alberta's ability to develop its resources in a carbon-constrained world.

To address the global challenges of energy for the future, the Alberta government, working with the energy industry and research providers, must embrace new and innovative approaches that result in positive incremental changes in environmental practices. Through strategic investments, our aim is to make the province a world-class energy research centre that can develop, adopt and adapt transformational technologies that minimize the impact on our environment.

Alberta's investment in sustainable energy technologies will be coordinated through the Alberta Energy Research Institute (AERI). AERI provides funding, coordination and harmonizing of energy research and technology development. AERI's mandate is to promote energy research, technology evaluation and technology transfer in areas that include oil and gas, heavy oil and oil sands, coal, electricity, and renewable and alternative energy. The AERI research strategy is intended to lead and support the transformation of separate sectors of the economy into an integrated energy industry focused on using Alberta's resources to their fullest potential while ensuring clean air, water and land.

AERI advises the Minister of Innovation and Science and the government regarding energy research and the development of resources in the interest of Albertans.

AERI will maintain a portfolio of research and technology programs that is directed towards maintaining current levels of oil and gas revenue; developing innovative technologies to address the challenges of climate change; extending the life of conventional resources; and exploiting additional unconventional resources.

AERI's strategic intent is to stimulate the research and development of new technology and assist the energy sector to play a dominant role in the new economy by:

- Developing value-added products and processes including alternate and renewable energy sources.
- Using best-in-class knowledge.
- Advancing technologies and environmental standards.

The intent will also be to adapt, demonstrate and use the best available technologies available elsewhere. Specifically in the area of renewable energy, the Government of Alberta will supplement its research, development and demonstration efforts with efforts taking place elsewhere in the country. Some government leadership will take place through the demonstration or purchase of these technologies, such as in retrofits to government buildings (solar energy) or in the purchase of green power for government use.

The three initial primary strategic drivers for research and technology will be:

- Development of cleaner coal technologies for electricity generation. In addition, the use of coal and other feedstocks for production of steam, hydrogen (for oil sands upgrading and fuel cells) and the capture of concentrated $CO_2$ streams for enhanced oil and gas recovery.
- Oil sands upgrading technology to produce new products customized for North American refineries. This will allow Alberta to reduce environmental impacts, and maintain/enhance the value obtained from bitumen and synthetic production, which is expected to double in the next five years.
- Management of $CO_2$ and other emissions by developing technology that will capture, transport and use $CO_2$ for increasing the recovery of conventional crude oil and injection into coal beds to release natural gas (see Carbon Management).

In addition to these major thrusts, the strategy includes research issues related to:

- Unlocking the potential of coal bed methane.
- Developing renewable and alternative energy sources associated primarily with fuel cell development and hydrogen technology.
- Lowering the emissions intensity of oil sands production and upgrading.
- Enhancing the recovery of conventional oil and gas.
- Reducing greenhouse gas emissions associated with oil, gas and coal production and use.

Our investments will lead to field plant demonstrations of value-added upgrading of Alberta resources into energy services and feedstocks (e.g. electricity, hydrogen, biofuels) with a significant reduction in greenhouse gas emissions intensity.

*Taking Action*

The Alberta government is committing to a partnership that is based on leveraged funding from the federal government, other governments and industry. In 2003/04 the Alberta government will invest in the Alberta Energy Research Institute.

In addition, the Alberta government will work with industry, universities and other research providers to develop world-class, cross-disciplinary centers of excellence in energy and environmental research and technology development.

Specific areas of focus related to the Alberta Energy Research Strategy include:

**Managing $CO_2$ and other emissions**

See the Carbon Management section of this plan for the province's strategy for carbon capture and storage in geological formations.

**Burning coal cleanly with significantly reduced environmental emissions** to generate electricity; using coal and other feedstocks to produce steam, hydrogen, synthetic natural gas, chemicals; adapting clean coal technologies to Alberta resources and integrating them with oil sands, petrochemicals, biomass and fuel cells; and capturing concentrated $CO_2$ streams to reduce environmental impacts and using this by-product as a vehicle for enhanced oil and gas recovery.

- Develop a network linking provincial, national and global research activities in cleaner energy.
- Leverage funds from the federal government, industry and research funding sources into a cleaner energy research program.
- Promote bench scale and pilot projects in clean coal technologies, integration with other feedstocks and low intensity heavy oil upgrading, and in emissions sensing and mitigation.

**Increasing the marketability and value of bitumen**

- Conduct a technical audit of research programs to understand the benefits and help reposition upgrading research areas that involve less energy intensity and customized synthetic products.

**Increasing recovery** from conventional oil and gas and accessing additional non-conventional reserves; natural gas from coal beds, bitumen and heavy oil; lowering intensity of extraction and recovery processes; management of oil field water and tailings.

- Work with other research agencies on less energy intensive in-situ and extraction processes, water use and tailings management issues.
- Work with research organizations and industry associations to promote industry working groups with a focus on oil and gas enhanced technology and optimizing economics.
- Work with Climate Change Central, the Petroleum Technology Alliance of Canada (PTAC) and the Canadian Environmental Technology Advancement Corporation (CETAC-West) to support emerging greenhouse gas reduction technologies in energy and other sectors.
- In October 2002, the Alberta government, in partnership with industry, invested $7 million in a $30 million heavy oil research partnership project to test the economic, environmental and technical viability of a process that involves injecting vaporized solvents into heavy oil. Known as the VAPEX Process, this promises to virtually eliminate greenhouse gas emissions and significantly reduce water consumption, as compared to other extraction technologies currently being used.

**Moving from hydrocarbons to a hydrogen economy** with a focus on infrastructure and fuel cell development that use Alberta resources; developing alternate sources of clean energy, including bioenergy.

- Develop and implement an Integrated Energy Research Strategy for Alberta.
- Increase the focus on alternative and renewable energy projects, in areas such as fuel cells and hydrogen technology.
- Interact with renewable and alternative energy industries and associations to establish their research priorities and assist research providers to address these priorities. The renewable and alternative energy sectors will be allocated between 13 to 23 per cent of the total new funding proposed by AERI.
- Focus on demonstration projects with private sector partners to promote knowledge of the new technologies and promote adoption of these technologies.

*What We Heard:*

**Albertans liked the strong emphasis the province is placing on technology. A long-term issue such as climate change requires significant investments in new technology. Some stakeholders felt that while technological innovation related to fossil-fuel energy sources required further investment, non-fossil fuel based energy sources also required provincial support.**

*Our Response:*

**Technological innovation will remain a key part of Alberta's Action Plan. In addition to supporting the fossil fuel-related research through AERI, the alternative energy and renewable energy sectors will be allocated between 13 to 23 per cent of the total proposed new funding for the Alberta Energy Research Strategy.**

# Carbon Management

## Vision

*Alberta develops the capacity for cost-effective and safe capture, use and storage of carbon dioxide ($CO_2$) for enhanced resource recovery.*

Carbon management is the capture and storage of $CO_2$ in geological formations.

Alberta $CO_2$ (e.g. from oil sands upgrading, oil refining, power generation, gas processing and petrochemical production) could potentially be captured and used to increase production from oil reservoirs and coal bed methane, or be stored in geological formations.

Currently, market conditions do not encourage widespread commercial use of $CO_2$ in Enhanced Oil Recovery (EOR), or Enhanced Coal Bed Methane (ECBM) recovery or other applications. The economics of capturing a pure stream of $CO_2$ are, at present, marginal. However, with oil and natural gas prices at high levels, there is industry interest in exploring the options for enhanced oil and gas recovery using captured $CO_2$.

The proposed carbon management strategy consists of eight broad goals. Each goal will be addressed over a planning cycle of eight years, which has been divided in three phases:

**Phase 1:** Current - 2003 - Enhanced recovery of Alberta fossil fuel resources.

**Phase 2:** 2004 - 2007 - Building the $CO_2$ market in Alberta.

**Phase 3:** Post 2007 - Commercially testing zero-emission coal plants.

The eight goals are:

### 1) Developing the $CO_2$ EOR Market

- By 2003, the Alberta government will partner with industry on three demonstration projects to use $CO_2$ to enhance oil production or maintain reservoir pressure.

### 2) Developing Alberta's Geo-science Base for $CO_2$ Storage in Geological Media

- The Alberta Geological Survey, in partnership with the Geological Survey of Canada will expand and support activities in the analysis of Alberta's subsurface suitability and capacity for $CO_2$ sequestration in hydrocarbon reservoirs, coal beds, and deep saline formations.
- The Alberta Geological Survey, Environment Canada, Alberta Research Council, Natural Resources Canada, Alberta universities, and industry will work together to assess the integrity and safety of such locations, both in the short and long term.

### 3) Cutting the Costs of Capture

- Considerable global research is underway to reduce the costs of purifying and capturing $CO_2$ from plant stacks. Drawing upon these efforts, research, adaptation and demonstration of new capture technologies will be a primary part of the proposed new focus on energy research.
- As part of the Alberta Energy Research Institute's Energy Strategy, initiatives will be pursued with a goal of reducing the cost of capture and compression of $CO_2$ by 50 per cent for retrofit operations and 75 per cent reduction in costs associated for new facilities.

### 4) Finding New Resources - Coal Bed Methane

- The Alberta Geological Survey and the Alberta Research Council will expand efforts to map and characterize coal beds and develop a better understanding of Alberta's coal bed methane potential. They will identify which coal beds are appropriate for enhanced methane production by $CO_2$ injection and storage, and address issues related to the disposal of produced water.
- Partnerships will be pursued with industry players that are already engaged in research efforts, and also to bring in new players. A key component will be to proceed with technical demonstration projects for Enhanced Coal Bed Methane recovery.

### 5) Infrastructure Development

- Identify infrastructure needs (e.g. pipelines or other facilities required for $CO_2$ transmission to selected sites) and pursue projects to build the infrastructure through incremental efforts under an industry/government partnership.

### 6) Develop Economic, Fiscal and Regulatory Requirements

- Work in collaboration with government agencies (including the federal government) and industry, to identify the types of economic, fiscal and regulatory frameworks that are conducive to a Carbon Management Strategy. For example:
  - The Alberta government will work with the federal government and other western provinces to develop protocols for measuring actual $CO_2$ stored, and to form the basis for environmental and safety regulations.
  - Alberta Energy will establish a royalty credit program to encourage early action for the use of $CO_2$ in Enhanced Oil Recovery operations. Companies who are interested in participating in demonstration projects will be eligible for this royalty.
  - The Alberta government will define the ownership, rights and policy regime for geologic pore spaces for long-term $CO_2$ storage.

### 7) Clarify Environmental/Health and Monitoring Requirements

- Focus research on the short and long-term fate and safety of geologically stored $CO_2$ to increase confidence and reduce risk. Build on the lessons learned from acid gas injection projects.
- Through demonstration projects with industry in Alberta (anticipated to begin in 2003) and elsewhere (e.g. Weyburn, Sask.), resolve any outstanding and new health, environmental and safety issues dealing with capture, transportation and storage of $CO_2$.
- Establish a $CO_2$ monitoring component on storage and leakage associated with three commercial demonstration projects.

### 8) Consult with the Public to Increase Awareness, Understanding and Acceptance

- Help achieve greater public awareness and understanding by addressing public concerns on possible safety and environmental issues associated with $CO_2$ storage. A strategy to engage key stakeholders and the public is currently being developed.

Taking Action

ALBERTANS & CLIMATE CHANGE

# Energy Conservation

Vision

*Albertans are North American leaders in the efficient use of energy.*

This strategy takes a very broad definition of energy conservation. It includes energy conservation, energy efficiency, and using alternative energy sources (the next section provides a specific focus on renewable and alternative energy). Energy conservation and improved energy efficiency are key ways Albertans can begin breaking the link between economic prosperity and emissions growth.

Over the past several years, Alberta organizations (industry, small businesses, municipalities) and people have increased their energy efficiency through a range of cost-effective actions. Equipment, materials, and technologies are continuing to evolve and increased efficiencies are possible.

Achieving further efficiencies will require a renewed commitment from all Albertans. The Alberta government will partner with other Alberta organizations and stakeholders to facilitate further action on energy efficiency and conservation.

The Alberta government's approach to energy conservation will focus on the following four elements:

- Facilitating access to electricity generated from a diversity of energy sources - including renewable power — and other energy conservation alternatives (for a further discussion of renewable energy, see the next section of this plan).
- Demonstrating leadership and reducing operating costs by promoting and implementing energy efficient options for government operations (see previous section on Government Leadership).
- Increasing the awareness of, and choices for, Albertans to adopt energy conservation opportunities.
- Encouraging innovation through energy efficiency demonstration projects or by facilitating action by energy consumers.

Achieving further efficiencies will also require a broad mix of initiatives, including incentives for energy efficient investments and minimum energy efficiency expectations.

The key mechanism for pursuing action on energy efficiency and conservation will be Alberta's new energy efficiency and conservation office - Energy Solutions Alberta. Established by Climate Change Central in partnership with the Alberta government in June 2002, Energy Solutions Alberta will focus on increasing access to new low emissions technologies, creating awareness and choices for Albertans, and encouraging innovation through demonstration or by encouraging action.

A website containing energy efficiency information for individuals and businesses www.altaenergysolutions.com has been established.

The office will have four core components:

- Public Awareness and Program Marketing.
- Program Advice and Support.
- Policy Advice and Recommendations.
- Program Development and Delivery.

Taking Action

ALBERTANS & CLIMATE CHANGE

Energy Solutions Alberta will concentrate on the residential and commercial sectors. Many of the building technologies and materials that make significant efficiency gains in this area already exist and their use depends on incentives, consumer education and removing policy barriers. Action on energy efficiency and conservation in other sectors will be addressed through the development of sectoral agreements.

Energy Solutions Alberta will take the following actions to support its core objectives:

1) **Expand public communication and education programs on energy efficiency and develop publicly accessible information tools to engage Albertans in taking action to reduce their GHG emissions.**

- Implement a strategy to ensure provincial activities related to climate change education and information programs are coordinated with the activities of Energy Solutions Alberta.
- Engage the efforts of Alberta's Public Education and Outreach Hub, established under Climate Change Central in 2000 to coordinate climate change education and awareness activities, to help Albertans demonstrate environmental stewardship (including energy efficiency) through school-based programs and public awareness.
- Launch public education and awareness campaigns on energy efficiency and conservation opportunities.

2) **Augment existing national energy conservation initiatives by increasing accessibility to these programs and by expanding them to the entire Alberta market.**

- Energy Solutions Alberta will work with the national Office of Energy Efficiency and establish a partnership agreement where it can jointly deliver national programs in Alberta, and act as an information clearinghouse and one-window contact for information.

3) **Compare the effectiveness of other programs/services delivery models and recommend effective implementation methods for Alberta.**

- Energy Solutions Alberta will commission an expert study to review energy efficiency programs in North America and recommend programs that could be implemented in Alberta.

4) **Design and help implement innovative programs that address GHG emissions through energy efficiency and conservation actions and result in real, quantifiable and verifiable GHG reductions.**

- Partner in the development and launch of a municipal building retrofit program.
- Explore options for launching a municipal street light pilot project targeted at testing new technologies in smaller communities and removing barriers to implementation. Based on results of this pilot initiative, expand program through innovative financing mechanisms.
- Expand the vehicle scrappage program based on the results of the Calgary pilot.

- Launch "teletrips" initiative in targeted Alberta municipalities.
- Partner on delivery of the EnerGuide Audit and Rebate program for homes.
- Determine a course of action for an enhanced provincial labeling program that makes it easy for the public and key energy consuming sectors to understand the environmental and economic consequences of their purchase decisions.
- Partner on delivering an anti-idling awareness program.
- Undertake a pilot initiative to reduce the up-front capital costs of retrofits, new appliances or distributed energy sources (e.g. micro-turbines or small fuel cells used to generate electricity at or near the point of energy consumption).
- Explore developing a pilot green mortgage or green loan program that would allow for energy efficiency considerations to be included in mortgage financing.
- Support the demonstration of energy efficiency buildings and practices across a variety of sectors.

5) **Increase local investments in energy efficiency and conservation.**

- Consider options for establishing a revolving fund for auditing and upgrading buildings not amenable to energy performance contracting.

6) **Leverage the effectiveness of the energy efficiency/conservation office by pursuing partners from all stakeholder groups and levels of government.**

- Partner with other governments and stakeholders on energy efficiency and conservation programs being undertaken in Alberta municipalities.

7) **Identify, review and recommend options to government for removing barriers that prevent the adoption of more energy efficient alternatives.**

- Develop interconnection guidelines for distributed electricity generation.
- Partner with Alberta Chapter of Canadian Electricity Code to recommend further changes to facilitate interconnection for small distributed generation.
- Review potential for net metering in Alberta (net metering would make it easier for homeowners or small businesses who generate their own electricity to sell surplus electricity back to the power grid).
- Partner on the removal of administration and procedural barriers to distributed generation.

8) **Collect the information required to properly analyze the success of Energy Solutions Alberta's activities.**

- Document and analyze energy efficiency trends, and develop performance measures for new programs.

*What We Heard:*

**Albertans liked the fact that Alberta's plan included an emphasis on energy efficiency and conservation. They support an increased focus on specific initiatives that target energy consumers.**

*Our Response:*

**The Alberta government will ask Climate Change Central to be the lead provincial organization for developing and implementing energy conservation and efficiency initiatives. The Alberta government expects that the focus of these initiatives will be on the public and key energy end-use sectors (e.g. municipalities, small business, commercial sector) that require additional support for energy conservation.**

Encouraging innovation through demonstration or by encouraging action.

The Alberta government will also support additional actions aimed at encouraging innovation and action to improve energy efficiency across the provincial economy. For example:

- The Alberta Energy Research Institute (AERI) will support research aimed at energy efficiency and alternative energy technologies.
- The Alberta government will partner with the building construction sector to increase the efficiency of new and existing buildings by incorporating an energy efficiency requirement into the provincial Building Code, establishing new Energy Codes or through other mechanisms.
- Alberta Environment and Alberta Revenue will establish a task force to consult with stakeholders and consumer groups to explore how market signals can encourage increased energy efficiency and conservation and identify potential revenue sources.
- The Alberta government will partner with municipalities to facilitate more environmentally sustainable forms of municipal infrastructure and planning (e.g. support for the City of Edmonton's Light Rail Transit expansion, or the City of Calgary's Ride the Wind transit power project).

# Renewable and Alternative Energy

## Vision

*Alberta's renewable and alternative energy sector will make a growing and significant contribution to the province's energy mix. Through an effective policy framework, the renewable and alternative energy sector will be competitive with other energy sources. Alberta will be recognized as a renewable energy center within North America.*

*What We Heard:*

**Albertans indicated they would like to see the government place a stronger emphasis on the role that renewable energy can play as part of the province's climate change response.**

*Our Response:*

**The Alberta government will make renewable energy a key component of the Alberta government's climate change response. In the May 2002 *Plan for Action*, action on renewable and alternative energy was included under the broad category of Energy Conservation. To reflect what we heard, Renewable and Alternative Energy is now a separate component of *Albertans & Climate Change: Taking Action*. In addition to supporting the work of groups like Climate Change Central in demonstrating new technologies and removing barriers to renewable and alternative energy technologies, the Alberta government will outline its expectations for the contribution that renewable and alternative energy will make to the provincial energy mix.**

Alberta's renewable and alternative energy sectors have experienced tremendous growth over the past five years. The province's electricity deregulation has been a key factor in facilitating new renewable and alternative energy development and private sector investment in these sectors. For example, Alberta's wind capacity has increased from 21 megawatts in 1996 to approximately 100 megawatts as of 2002. As well, the private sector has proposed a wide range of new wind, hydro and biomass projects that will allow Alberta's renewable energy capacity to increase over the coming years. Despite this tremendous growth, renewable energy remains a relatively small proportion (less than nine per cent) of the province's overall electricity portfolio and an even smaller proportion of the electricity actually consumed in the province.

Alberta's climate change response calls for a larger role for renewable energy. *Albertans & Climate Change: Taking Action* signals the province's interest in increasing the capacity of the renewable energy sector and an increase in electricity generated from these sources.

Taking Action

ALBERTANS & CLIMATE CHANGE

### Policy Framework for Renewable and Alternative Energy

The Alberta government is committed to the principles of electricity deregulation and the need for a level playing field among all electricity generation sources. The Alberta government is also committed to increasing the proportion of renewable and alternate energy supplied to consumers. It does not, however, believe that it is prudent

to directly subsidize the renewable or alternative energy sectors. The government's efforts to support these sectors will instead be focused on removing policy, regulatory or technical barriers, facilitating customer choice and consumer understanding of the emissions intensity of their electricity purchases and working with stakeholders to identify realistic yet challenging expectations on the appropriate minimum capacity of renewable and alternative electricity the province should be moving towards.

Specific initiatives include:

- The Alberta government will set a goal for increasing the renewable and alternative energy portion of total provincial energy capacity by 3.5 per cent by 2008. This equals about 560 Megawatts of new capacity. The specific framework for reaching this target will be established by the Clean Air Strategic Alliance Electricity Project Team.
- Requiring electricity retailers to disclose the emissions intensity of the electricity they market to consumers.
- In 2004, the Alberta government will require at least 10 per cent of the electricity consumed at government facilities to be generated from green power sources. The Alberta government will immediately begin securing a diverse portfolio of green power providers.
- The Alberta government will continue to work with our partners in industry and other governments to develop "green corridors" that support increased use of alternative fuel vehicles. We will build on initial efforts to establish a green corridor between Calgary and Banff.

## Storing Carbon in Agricultural and Forestry Sinks

### Vision

*To develop, enhance and promote environmentally sustainable agriculture and forestry practices across Alberta that make meaningful, long-term contributions to reducing atmospheric greenhouse gas concentrations and maintain or enhance ecosystem health and integrity.*

Alberta has significant potential for capturing and storing carbon in our agricultural lands and forests. Alberta stakeholders understand the opportunity in taking action to enhance carbon storage in soils and forests. For example, early indications are that by adopting environmentally sustainable management practices, agriculture can contribute significantly to offsetting greenhouse gas emissions.

Alberta organizations are moving to realize this potential. For example, no-till and low-till farming practices are now commonly accepted as effective farming practices. Some forest producers are exploring ways of enhancing the carbon uptake from managed forests. The Alberta government's Forest Management Agreements outline clear expectations for reforestation. The benefits of environmentally sustainable management practices to both the environment and agriculture/forestry sectors justify

programs and policies directed towards promoting the use of these practices.

Current approaches under consideration include: using currently available best management practices such as reduced or zero till farming, comprehensive nutrient management practices, reduced summer fallow and using bioenergy sources.

Enhanced forest management can result in a timely benefit to global well-being by increasing the carbon stored in both forest soils and trees.

The overall strategy for forest management in Alberta is to ensure that the values and benefits Albertans receive from environmental resources and economic, recreational, cultural and social activities conducted on Alberta's public lands are sustainable for future generations.

Alberta continues to explore sustainable forest management options that will maintain or increase carbon storage, reduce emissions, or reduce the risk of emissions.

Most stakeholders agree that agriculture and forestry sinks can provide an interim, cost-effective solution for major greenhouse gas emitters to meet targets for greenhouse gas emission reductions. However, clear rules around the ownership of emission reductions, as well as an emission trading framework, are required.

Many organizations, including industry, are increasingly looking at emission reductions from carbon capture and storage as an element of their overall greenhouse gas plans. Carbon capture and storage is an important activity to help ease the transition until low-emitting technologies enter the market. In conjunction with the development of an emissions offset trading system, the Alberta government will ensure that emission reductions achieved through verifiable carbon sequestration initiatives can be used against corporate or sectoral objectives.

Agriculture and forestry stakeholders have asked for clear policy direction on the ownership of carbon in the soil and vegetation (applying primarily to emission removals). They also are seeking confirmation of the government's expectations of how their sector will be expected to contribute to future emission reductions. A clear government statement on the ownership of emission reductions from agriculture and forest sinks will be the initial step for facilitating private sector activities to enhance these carbon sinks.

Carbon capture and storage in agriculture and forest sinks is a reversible process, and this reversal can happen within a very short period of time. The core concern associated with the impermanent nature of carbon sinks is determining who bears the ultimate liability for released carbon - if credit is given when carbon is captured and stored, who is responsible for the debit when carbon is released? This liability issue needs to be resolved.

To realize Alberta's biological sink opportunities, the following focus areas are being pursued:

*ACTION:*

**Explore the use of biological sinks (agriculture soils and forests) to store carbon.**

- Work with Climate Change Central and other stakeholders to finalize and implement a biosinks framework aimed at enhancing carbon capture and storage activities in the agriculture and forest sectors.
- Conduct and compile cost/benefit analyses of best management practices in agriculture and forestry to demonstrate their efficiency and conservation benefits.
- Identify the gaps and uncertainties in our current estimates of greenhouse gas removal/reduction by biological sinks, and carry out research designed to address these gaps.
- Explore the feasibility of establishing a provincial multi-sector fund that offers conservation incentives for environmentally sustainable agriculture/forestry practices and adoption of new technologies.
- Examine potential market-based instruments for adopting these practices, such as tradable permits (land use, GHG emissions), tax credits, financial incentives, etc.
- Assess the use of the environmental farm plan as a delivery mechanism for best management practices.
- Assess incentives for adopting conservation practices.

*ACTION:*

**Address stakeholder uncertainty.**

- The Alberta government position on the ownership of the carbon in biological sinks is that:
  - the title to sinks on Alberta Crown land is a property right vested in the Alberta government.
  - the title to sinks on all other land in Alberta is a property right vested in the owner of the land. The ownership of any incremental carbon offsets created through forest or soil capture or storage activities is a private matter.
  - sinks will be considered personal property for the purpose of emission reduction trading.

*ACTION:*

**Establish a provincial GHG emissions trading framework that links carbon enhancements to soil and forest sinks to the trading of emission reduction offsets (see Government Leadership-Action: Emission offset trading system).**

- Develop specific criteria for applying sink credits to current offset obligations for new thermal power plants or other projects.
- Work with Climate Change Central to establish the framework for a measuring, monitoring and verification system.
- Through pilot programs and research in partnership with other stakeholders, advance understanding of the role that emission offset trading can play within the agriculture and forestry sectors.
- Undertake a full cost analysis of greenhouse gas reduction practices, including monitoring and verification.
- Establish a 1990 soil carbon/forestry level baseline to recognize and not penalize early adopters.
- Work with Climate Change Central to develop a land use registry for documenting greenhouse gas emissions reductions and removals.
- Develop long-range forecasts on the value of carbon credits.

*ACTION:*

**Overcome permanence and liability issues.**

- Examine an appropriate mechanism for dealing with liability in emissions removal.
- Couple this mechanism with standard contracts for facilitating trades and minimizing risks between buyer and seller.
- Assess the risk/cost of emissions from previously sequestered soil carbon.
- Develop criteria for applying sinks credits to current offset obligations related to new facilities (e.g. new thermal power plants).

*What We Heard:*

**Some provincial stakeholders believe that biological sinks will create new opportunities but would like more information on the role, management and regulatory regime for biological sinks.**

*Our Response:*

**The Alberta government will pursue a coordinated approach to removing barriers associated with using biological sinks.**

Vision

*Albertans, their communities and industries take steps to prepare for possible future climates and develop the ability to adapt successfully to changes in climate.*

While it is important to reduce greenhouse gas emissions in an effort to mitigate the effect of climate change, we must also be prepared to adapt, regardless of the ultimate causes of these changes.

Adaptation seeks to ensure that our natural and socio-economic systems are able to cope with the potential impacts of climate change and can take advantage of potential opportunities.

Adaptation must take place where climate effects are felt, addressing the particular changes being experienced. Alberta requires its own adaptation strategy geared towards our specific needs, building on what is transferable from elsewhere.

Adaptation is risk management based on sound science. Risk management for climate change will be based on anticipating, understanding and addressing the effects of climate change. Scenarios of emissions, climate and socioeconomic conditions are used to provide estimates of potential impacts. Scenarios are not forecasts or predictions - they describe plausible futures and a range of scenarios is needed to assess the risk. They rely on sound science and objectivity to ensure Albertans are well informed about the options available and are able to make good decisions.

Research and development, monitoring and communications are important to ensure good information is available to everyone affected by climate change.

Climate change affects our whole society, environment and economy. However, different systems have different natural and socio-economic characteristics, so adaptation to climate change will differ among systems. An Alberta climate change adaptation strategy will involve cooperative efforts among the sectors affected by climate change. This cooperation will improve overall priority setting and help ensure the objectives of different government departments complement each other and are responsive to changing needs. Cooperation is necessary to assess and monitor progress when dealing with the long-term adaptation process.

*ACTION:*

**Establish an adaptation research program including collaboration with other governments in Canada.**

- Establish partnerships with federal-provincial research agencies, such as the Prairie Adaptation Research Collaborative (PARC), for collaboration in research on prairie adaptation.
- Support the University of Lethbridge Water Institute for Semi-arid Ecosystems (WISE) program, which includes a significant climate change adaptation component.
- Identify information gaps and coordinate research in the science, impacts and adaptation of climate change, focusing on Alberta.

- Develop synergy and partnerships with other climate change research and development efforts such as BIOCAP Canada Foundation, a national university research organization for biology-based research in climate change.
- Provide a basic set of climate scenarios for use by government departments and all Albertans.
- Develop suitable indicators and information systems so that significant changes can be detected.

*ACTION:*

**Help Albertans explicitly address the risks of short-term climate variability and extremes - notably in the management and planning for agriculture, forestry, health, municipalities, infrastructure and water.**

- Assess the impacts associated with current and future climate extremes.
- Assess current responses to climate extremes.
- Incorporate improved responses to climate extremes into management and planning at provincial and regional levels.

*ACTION:*

**By 2010, prepare Albertans to deal with longer-term climate changes as a result of developing scenarios.**

- Assess the ability of our major systems (natural, economic and institutional) to adapt to the range of possible future climates.
- Develop options to increase adaptability of those systems that are not sufficiently robust.
- Implement changes to management systems to ensure that they have the ability to address possible future climates.

*ACTION:*

**Keep Albertans informed of the risks and opportunities of climate change and engage them in efforts to adapt.**

- Inform Albertans of what the government is doing on adapting to climate change.
- Involve Albertans in adapting through their daily activities.
- Facilitate access to current knowledge of climate change and adaptation.

# Conclusion and Next Steps

*Albertans & Climate Change: Taking Action* reflects the interests of Albertans by responding to the climate change issue in a manner that is environmentally effective and economically responsible. This plan will result in real greenhouse gas emission reductions in Alberta. It focuses on actions that increase the productivity and efficiency of all sectors of the economy, and prepares Albertans and Alberta organizations for the long-term challenge of achieving deeper reductions in greenhouse gas emissions over the coming century.

Alberta's approach is based on partnering with all stakeholders to identify challenging goals for reducing the emission intensity of their operations. Alberta will work with industry and other governments to support innovative technologies, and best practices will play a key role in facilitating reduced emission intensities. Through our strong partnerships in organizations such as Climate Change Central, our approach will also provide Alberta energy consumers with the tools and resources they need to improve their efficiency.

Effectively contributing to climate change solutions requires a workable plan for stakeholders to adopt. Alberta's plan reflects the interest of Alberta organizations and the public in developing an environmentally effective response. Our plan also clearly identifies the expectations that the province will have of all sectors in contributing to the challenge ahead.

Most of all, *Albertans & Climate Change: Taking Action* reflects a commitment:

- To take immediate action on climate change.
- To work collaboratively - building genuine partnerships with trust and confidence.
- To make strategic investments that position us to make ever increasing contributions to actions on climate change, and to continue to develop our economy to be more competitive under any world policy and in any environmental or economic climate.

Taking Action

Albertans & Climate Change

# A Glossary of Terms

## carbon sinks

Any naturally occurring thing, like forests or specific kinds of agricultural activity, that can be grown or created specifically to help absorb more carbon dioxide.

## cleaner Energy Exports

Natural gas or hydropower from Canada provides an environmental benefit to the United States when they buy and use these "cleaner" fuels in place of their coal-fired electric power. However, producing this cleaner energy generates greenhouse gas emissions in Canada, for which we would be liable under any international emissions reduction agreement like Kyoto. The federal government is now arguing that Canada's cleaner energy exports should be recognized internationally.

## climate change

The Earth's climate system adjusts to any rise in greenhouse gas levels to keep its global "energy budget" in balance. A thicker blanket of greenhouse gases - from increased human burning of fossil fuels for example - will result in warming of the Earth's surface and its lower atmosphere, or in changed climate patterns.

## climate change central

A unique public-private partnership that promotes the development of innovative responses to global climate change and its impacts. The Alberta government is a partner in Climate Change Central's efforts to build links and relationships between businesses, governments and other stakeholders in Alberta interested in pursuing greenhouse gas reduction initiatives.

## Domestic Emissions Trading

Emissions trading within Canada, as distinct from international emissions trading.

## Emissions Intensity

Greenhouse gas emissions released as measured against some other factor like the Gross Domestic Product (GDP) of a nation, province or state. Other standards by which emissions intensity can be measured include: per barrel of oil; per million cubic feet of natural gas; per tonne of coal, cement, etc. produced; or per megawatt hour of electricity.

Taking Action

ALBERTANS & CLIMATE CHANGE

## Emissions Trading

A market-based system that allows companies flexibility to choose the most cost-effective solutions to achieve established environmental goals. Companies that produce fewer emissions than they are allowed could sell their "excess capacity" to others who do not.

## Greenhouse Gases (GHGs)

The main greenhouse gases are $CO_2$, methane, nitrous oxide and the chlorofluorocarbons (CFCs). All but CFCs occur naturally. Collectively, these gases make up less than one per cent of our atmosphere, sustaining what is called the Earth's "natural greenhouse effect." Without this, Earth would be 30 degrees cooler - essentially, a frozen planet.

## International Credits/Permits

The Kyoto Protocol allows for creation and transfer of emissions credits or permits between countries. These are designed to minimize the cost of reducing global greenhouse emissions and include: Joint Implementation (emission-reducing projects between two countries with a Kyoto target); Clean Development Mechanisms (project-based reductions between developed and developing countries), and International Emissions Trading (international trading of international greenhouse gas permits).

## Intergovernmental Panel on Climate Change (IPCC)

A panel set up by the World Meteorological Organization and the United Nations Environment Programme in 1988, in recognition of potential global climate change. The panel's role is to assess the scientific, technical and socio-economic information needed to understand the risk of human-induced climate change. IPCC does not carry out research or monitor climate related data, but bases its assessments mainly on peer reviewed and published scientific/technical literature.

## Kyoto Protocol

Adopted in 1997, Kyoto's key concepts state that: developed countries should commit to reducing collective emissions of six key greenhouse gases by an average of at least five per cent; national emissions targets must be achieved by 2008-2012; and, countries have some flexibility in how to make and measure their emissions reductions.

## Non-Renewable Energy

Non-renewable energy comes from a resource that is not replaced, or replaced only very slowly, by natural processes. Primary examples of fossil fuels are: oil, natural gas and coal. These fossil fuels are produced by decay of plant and animal matter, at much slower rates than our present fossil fuel consumption.

## Renewable Energy

An energy resource that is replaced rapidly by natural processes. Examples include: sunlight, hydropower (water a through a dam) and wood.

## Tradeable Emissions Permits

Part of a domestic emissions trading system *(see above)* that allows an emitter a specified number of tonnes of emissions. Once this limit has been reached, the permit expires. Total number of permits in any tradable market equals the level of emissions sought by the regulating authorities.

## U.N. Framework Convention on Climate Change

This is the governing body for international climate change negotiations that was established in 1992 at the Rio Earth Summit. The convention's primary objective is: "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic (man-made) interference with the climate system." This level is to be achieved "within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner." The Kyoto Protocol document came out of this U.N. convention.

Notes

ALBERTANS & CLIMATE CHANGE

# *Taking* ACTION

## *Highlights*

**October 2002**

*In May 2002, the Government of Alberta released a draft Plan for Action proposing an Alberta approach to address the issue of climate change and reduce greenhouse gas emissions.*

*After months of public discussion and consultations, Albertans are now committed to a plan for Taking Action.*

***Albertans & Climate Change: Taking Action*** outlines Alberta's goals, targets and actions to reduce greenhouse gas emissions in the province.

Alberta is committed to doing its part to reduce national and global emissions. Our plan trains our economy to win the emissions reduction race in the long run, instead of burning us out in the first lap to meet the Kyoto finish line.

Alberta's action plan outlines a number of approaches that, combined, result in improving our efficiency in the short term and substantial reductions in emissions over time.

The plan focuses on improving energy efficiency, enhancing how we use technology to control industrial emissions, seeking out new environmentally friendly sources of energy, and better managing our emissions today and in the future.

True to the spirit of Alberta, our plan asks all Albertans – both organizations and individuals – to go beyond "business-as-usual" and work to be "best-in-class".

Like many initiatives in Alberta's history, Alberta's plan on climate change can contribute to a national, collaborative approach as provinces, territories and the federal government work together towards an achievable national climate change strategy.

*Highlights of Alberta's action plan on climate change:*

- *Taking immediate action on climate change*
- *Working collaboratively on partnerships*
- *Making strategic investments that help Alberta address climate change and continue to develop a competitive Alberta economy*

Alberta
GOVERNMENT OF ALBERTA

## REAL REDUCTIONS OVER REALISTIC TIMELINES

Alberta's plan to reduce emissions is based on reducing emissions intensity rather than an absolute reduction in emissions.

This approach allows us to balance the environmental and economic goals of all Albertans.

By 2020, Alberta will cut emissions intensity in the province by 50 per cent from 1990 levels, the equivalent of a reduction of 60 million tonnes of greenhouse gas emissions below "business-as-usual".

*Emissions intensity focuses on the content of emissions relative to output instead of total volume. It is measured against a factor such as Gross Domestic Product (GDP) of a province, production of a barrel of oil or a million cubic feet of natural gas, or a megawatt hour of electricity.*

To measure our progress toward this target, the government has set an initial milestone of a 20 million tonne reduction in emissions below "business-as-usual" by 2010.

Alberta recognizes that more significant emissions reductions will be required over the longer term. This action plan is only the beginning of a 50-year initiative to dramatically reduce carbon emissions.

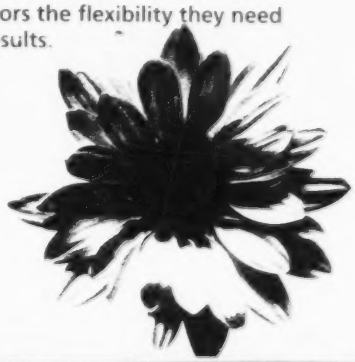
## ALBERTA INDUSTRY LEADING THE WAY

Alberta companies have a lengthy track record of developing and delivering innovative and leading edge technologies. Many organizations have already taken significant steps toward reducing greenhouse gas emissions. Many more are committed to finding new ways to use energy resources in the most effective manner.

In fact, in the 10 years between 1990 and 1999, Alberta has cut its $CO_2$ emissions intensity by more than 13 per cent. The initiative of Alberta industry has also resulted in reduced emissions intensity in oil sands production and upgrading, reduced flaring at oil and gas wells, increased efficiencies among coal-fired electricity plants and increased investment in renewable energy.

As a key part of Alberta's action plan, over the next two years, the Alberta government will negotiate binding agreements with specific sectors, including those of electricity, petroleum, transportation, forestry, municipalities, mining, manufacturing, commercial and agriculture, to set specific, measurable goals for further reductions of greenhouse gas emissions.

Pursuing agreements with each economic sector ensures emission reductions while providing all sectors the flexibility they need to achieve real results.



### RULES AND REGULATIONS

Alberta will back up its sectoral agreements with legislation and regulatory provisions to provide all organizations a clear understanding of the province's expectations for emission reductions and to ensure the agreements are met. These regulatory tools will include standards, conditions within industry approvals, and financial consequences for non-participation. This will ensure fairness, equity and certainty.

Work has already begun in this area. As of May 2002, companies with high volumes of emissions will be required to monitor and report their greenhouse gas emissions. This is the first step to better understanding the volume and nature of emissions, and can lead to reducing overall emissions.

### ENERGY CONSERVATION

Simply put, energy conservation makes sense — it saves money, energy and our environment.

The Alberta government will help Albertans reduce their energy consumption by:

- Supporting consumer education and pilot programs for improving and encouraging energy efficiency.
- Supporting Climate Change Central's new Energy Solutions Alberta office, a one-stop shop for information about energy efficiency and conservation.

### TECHNOLOGY AND INNOVATION

Alberta strongly believes technology and innovation hold the key to significant reductions in greenhouse gas emissions in the future.

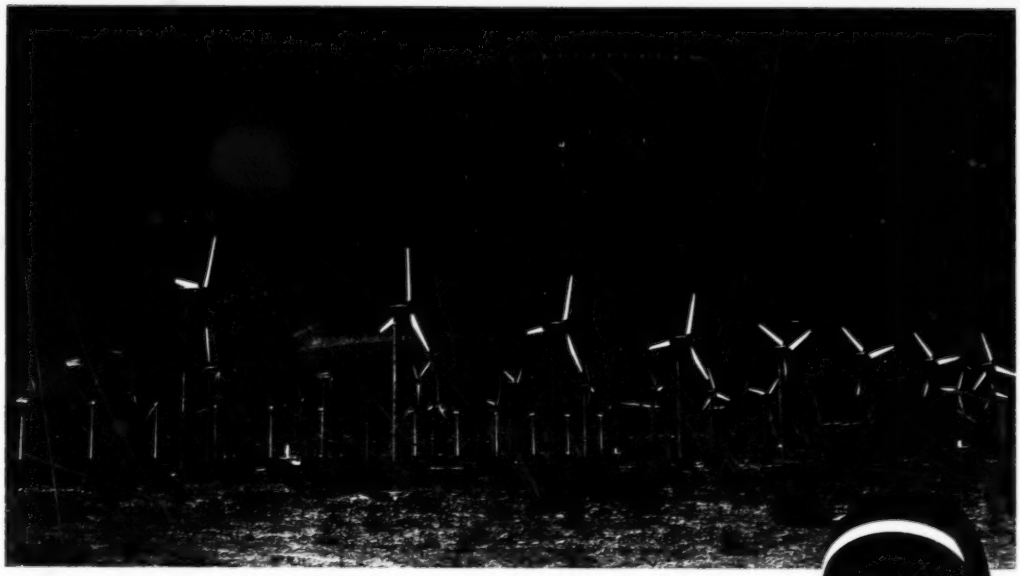
Building on Alberta's strong international reputation for research and development, we are increasing investment to speed up development and application of emerging environmental and energy technologies.

### CARBON MANAGEMENT

Another key opportunity is in research on capturing carbon dioxide for use in increasing methane production. This includes more funding for the Alberta Energy Research Institute (AERI) and royalty credits for projects that use carbon dioxide for enhanced oil recovery.

*Renewable energy is an energy resource that is generated by natural processes. It includes sources such as sunlight, hydropower, wind and wood.*

A strong emphasis on renewable energy is also a key part of Alberta's action plan. By focusing on removing regulatory or technical barriers from the renewable and alternative energy sectors, Alberta electricity retailers will be expected to provide more green power to consumers and to disclose the emission intensity of electricity they market.



### ADAPTING TO CHANGE

The Government of Alberta is investing and participating in national and regional research initiatives addressing water supply and drought management, and other climate change impacts specific to the prairies.

### GOVERNMENT LEADING THE WAY

Over the past decade, the Alberta government has cut greenhouse gas emissions from its own operations by more than 20 per cent from 1990 levels.

We have won three national awards from Voluntary Challenge and Registry Inc. for these efforts and are committed to reducing our emissions by 26 per cent below 1990 levels by 2005.

To support that, the Alberta government is developing a fund aimed at promoting innovative technologies and energy conservation practices for government operations.

Recognizing that transportation is a major contributor to greenhouse gas emissions, the Alberta government is also acquiring hybrid vehicles and will soon begin a government driver education program that encourages more fuel-efficient driving.

### SETTING AN EXAMPLE

While this plan is designed to meet the unique needs of Albertans, it may also serve as a model for other provinces, territories and the federal government as we work together towards an achievable national climate change strategy.

### MAKING A DIFFERENCE

Working together as citizens, communities and governments is the best way to reduce greenhouse gas emissions and address climate change.

Together we can make a difference.

**Discover the solution.**

Read Alberta's Plan at www.gov.ab.ca or call 310-4455 (toll-free across Alberta) to request a copy of *Albertans & Climate Change: Taking Action.*

ISBN No. 0-7785-2424-8
Pub. No. I/923

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ISBN No. 0-7785-2422-1
Pub No. I/922

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